

What is claimed is:

1 1. A system for extending a distance of x Digital Subscriber Line using a reserved telephone
2 line, comprising:

3 a Customer-Provided Equipment for supplying an x Digital Subscriber Line transmission
4 service to a subscriber terminal;

5 a Digital Subscriber Line Access Multiplexer setting an initial link with the
6 Customer-Provided Equipment for an x Digital Subscriber Line transmission service, and
7 transceiving data with the Customer-Provided Equipment through the set link; and

8 a distance extension module being installed with at least more than one module between the
9 Digital Subscriber Line Access Multiplexer and the Customer-Provided Equipment, in order to
10 receive x Digital Subscriber Line transmission data from the Digital Subscriber Line Access
11 Multiplexer in connection with an optional reserved telephone line selected from telephone line
12 bundles incoming from the Digital Subscriber Line Access Multiplexer, and after separating the
13 received transmission data, to transmit the separated transmission data to a module of a back end or
14 the Customer-Provided Equipment, or to transmit transmission data received from the module of the
15 back end or the Customer-Provided Equipment.

1 2. The system of claim 1, wherein each distance extension module, comprising:

2 a Customer-Provided Equipment module receiving x Digital Subscriber Line transmission
3 data from the Digital Subscriber Line Access Multiplexer by being connected to each of reserved

4 telephone lines among telephone line bundles incoming from the Digital Subscriber Line Access
5 Multiplexer or a distance extension module of a front end, and separating the received transmission
6 data or transmitting optional x Digital Subscriber Line transmission data to the Digital Subscriber
7 Line Access Multiplexer;

8 a Central Office module transmitting the transmission data separated through the
9 Customer-Provided Equipment module to a distance extension module of a back end or the
10 Customer-Provided Equipment in order to extend the x Digital Subscriber Line distance, or
11 transmitting transmission data received from the distance extension module of the back end or the
12 Customer-Provided Equipment to the Customer-Provided Equipment; and

13 a controller setting an initial link between the Customer-Provided Equipment module and
14 the Digital Subscriber Line Access Multiplexer or the Central Office module of the distance
15 extension module of the front end, setting an initial link between the Central Office module and the
16 Customer-Provided Equipment module of the distance extension module of the back end or the
17 Customer-Provided Equipment, transmitting set link information to the Digital Subscriber Line
18 Access Multiplexer, and relaying the transmission data between the Customer-Provided Equipment
19 module and the Central Office module.

1 3. The system of claim 1, wherein the Digital Subscriber Line Access Multiplexer includes
2 a controller for setting the initial link with the neighboring distance extension modules, receiving
3 the link information set between the distance extension module and the Customer-Provided
4 Equipment, and setting a link to the Customer-Provided Equipment.

1 4. The system of claim 1, wherein the distance extension module uses reserved telephone
2 lines installed in a home distributor or a terminal box.

1 5. The system of claim 4, wherein the home distributor or the terminal box uses reserved
2 telephone lines including a Customer-Provided Equipment distribution module for connecting with
3 a home telephone network by being connected to a main line of telephone line bundles from the
4 Digital Subscriber Line Access Multiplexer or the distance extension module of the front end.

1 6. A method for extending a distance of x Digital Subscriber Line using a reserved telephone
2 line, comprising:

3 supplying an x Digital Subscriber Line transmission service to a subscriber terminal by a
4 Customer-Provided Equipment;

5 setting an initial link with the Customer-Provided Equipment for an x Digital Subscriber Line
6 transmission service, and transceiving data with the Customer-Provided Equipment through the set
7 link by a Digital Subscriber Line Access Multiplexer; and

8 installing a distance extension module with at least more than one module between the
9 Digital Subscriber Line Access Multiplexer and the Customer-Provided Equipment, in order to
10 receive x Digital Subscriber Line transmission data from the Digital Subscriber Line Access
11 Multiplexer in connection with an optional reserved telephone line selected from telephone line
12 bundles incoming from the Digital Subscriber Line Access Multiplexer, and after separating the

13 received transmission data, to transmit the separated transmission data to a module of a back end or
14 the Customer-Provided Equipment, or to transmit transmission data received from the module of the
15 back end or the Customer-Provided Equipment.

1 7. The method of claim 6, with each distance extension module, comprising:

2 receiving, by a Customer-Provided Equipment module, x Digital Subscriber Line
3 transmission data from the Digital Subscriber Line Access Multiplexer by being connected to each
4 of reserved telephone lines among telephone line bundles incoming from the Digital Subscriber Line
5 Access Multiplexer or a distance extension module of a front end, and separating the received
6 transmission data or transmitting optional x Digital Subscriber Line transmission data to the Digital
7 Subscriber Line Access Multiplexer;

8 transmitting, by a Central Office module, the transmission data separated through the
9 Customer-Provided Equipment module to a distance extension module of a back end or the
10 Customer-Provided Equipment in order to extend the x Digital Subscriber Line distance, or
11 transmitting transmission data received from the distance extension module of the back end or the
12 Customer-Provided Equipment to the Customer-Provided Equipment; and

13 setting, by a controller, an initial link between the Customer-Provided Equipment module
14 and the Digital Subscriber Line Access Multiplexer or the Central Office module of the distance
15 extension module of the front end, setting an initial link between the Central Office module and the
16 Customer-Provided Equipment module of the distance extension module of the back end or the
17 Customer-Provided Equipment, transmitting set link information to the Digital Subscriber Line

18 Access Multiplexer, and relaying the transmission data between the Customer-Provided Equipment
19 module and the Central Office module.

1 8. The method of claim 7, wherein the Digital Subscriber Line Access Multiplexer comprises
2 setting, by a controller, the initial link with the neighboring distance extension modules, receiving
3 the link information set between the distance extension module and the Customer-Provided
4 Equipment, and setting a link to the Customer-Provided Equipment.

1 9. The method of claim 7, wherein the distance extension module uses reserved telephone
2 lines installed in a home distributor or a terminal box.

1 10. The method of claim 9, wherein the home distributor or the terminal box uses reserved
2 telephone lines including a Customer-Provided Equipment distribution module for connecting with
3 a home telephone network by being connected to a main line of telephone line bundles from the
4 Digital Subscriber Line Access Multiplexer or the distance extension module of the front end.

1 11. A system for extending a distance of x Digital Subscriber Line using a reserved telephone
2 line, comprising:

3 a first unit supplying an x Digital Subscriber Line transmission service to a subscriber
4 terminal;

5 a second unit setting an initial link with the first unit for an x Digital Subscriber Line

6 transmission service, and transceiving data with the first unit through the set link; and

7 a third unit being installed with at least more than one module between the Digital Subscriber
8 Line Access Multiplexer and the first unit, in order to receive x Digital Subscriber Line transmission
9 data from the second unit in connection with an optional reserved telephone line selected from
10 telephone line bundles incoming from the second unit, and after separating the received transmission
11 data, to transmit the separated transmission data to a module of a back end or the first unit, or to
12 transmit transmission data received from the module of the back end or the first unit.

1 12. The system of claim 11, wherein each third unit, comprising:

2 a fourth unit receiving x Digital Subscriber Line transmission data from the Digital
3 Subscriber Line Access Multiplexer by being connected to each of reserved telephone lines among
4 telephone line bundles incoming from the second unit or the third unit of a front end, and separating
5 the received transmission data or transmitting optional x Digital Subscriber Line transmission data
6 to the second unit;

7 a fifth unit transmitting the transmission data separated through the fourth unit to a distance
8 extension module of a back end or the first unit in order to extend the x Digital Subscriber Line
9 distance, or transmitting transmission data received from the distance extension module of the back
10 end or the first unit to the first unit; and

11 a sixth unit setting an initial link between the fourth unit and the second unit or the fifth unit
12 of the distance extension module of the front end, setting an initial link between the fifth unit and
13 the fourth unit of the third unit of the back end or the first unit, transmitting set link information to

14 the second unit, and relaying the transmission data between the fourth unit and the fifth unit.

1 13. The system of claim 12, wherein the second unit includes a controller for setting the
2 initial link with the neighboring third units, receiving the link information set between the third unit
3 and the first unit, and setting a link to the first unit.

1 14. The system of claim 13, wherein the third unit uses reserved telephone lines installed in
2 a home distributor or a terminal box.

1 15. The system of claim 14, wherein the home distributor or the terminal box uses reserved
2 telephone lines including a Customer-Provided Equipment distribution module for connecting with
3 a home telephone network by being connected to a main line of telephone line bundles from the
4 second unit or the third unit of the front end.